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| **Lesson Title:** Motion and Force |
| **Subject area / course / grade level: 5th** |
| **Introduction:** Newton’s Laws of Motion Brainpop and discussion |
| **Lesson Length: 45 minutes** |
| **Materials:**  Promethean Board, Science book, Science interactive notebook, 6 shoeboxes, tape, big rubber bands, 6 toy trucks, scissors, 12 rulers. |
| **Lesson Overview:**  Power point presentation “Motion and Force” |
| **Tennessee Standards:**  **TN Grade 5**  SPI 0507.11.1 Explain the relationship that exist among mass, force, and distance traveled. |
| **Lesson objective(s):**  What is the relationship that exist among mass, force, and distance traveled? |
| **ENGAGEMENT**  Create a foldable including Newton’s Laws of Motion.  1st- Law of Inertia (resists change)  2nd- F=ma (force equals mass times acceleration/object changes when force is applied)  3rd- Action/Reaction (equal and opposite reaction)  The students will write the definition and draw an example of each law. Students will be able to discuss Newton’s laws of motion within a group and apply their knowledge in real life examples. |
| **EXPLORATION-textbook pg. 353**  Teacher will pre-construct box project with trucks.   1. Cut one 2. Tape   After the students have completed the mini-lab, they will report out their findings and elaborate on the concept using real world examples. Students can choose oral, written or in their interactive notebooks. |
| **EXPLANATION**  Design another lab experiment to support one of Newton’s Laws. Include a list of materials needed and directions to successfully perform this lab.  How would changing the force affect the distance the truck traveled?  Describe how changing the mass of the truck affect the speed of the truck?  Which vehicles are generally safer? Larger or smaller? Explain.  Why do we have speed limits for driving? Seat belts use? |
| **ELABORATION**  ­­Through scientific investigation, the students will demonstrate understanding of the concepts through their ability to relate and apply to real world examples in open or a group discussion. A student from each group will summarize the conclusion of the group discussion using *mass, force*, and *distance* traveled. |
| **EVALUATION**  Students will complete the exit activity- “Motion and Force” worksheet to check for complete understanding. |